

b) a transmembrane domain joined to the carboxy terminus of said extracellular domain, said transmembrane domain comprising a transmembrane domain amino acid sequence substantially similar to either a transmembrane CaR amino acid sequence, a transmembrane mGluR amino acid sequence, or a transmembrane GABA_B receptor amino acid sequence;

31 c) an intracellular domain joined to the carboxy terminus of said transmembrane domain comprising all or a portion of an intracellular amino acid sequence substantially similar to either an intracellular CaR amino acid sequence, an intracellular mGluR amino acid sequence, or an intracellular GABA_B receptor amino acid sequence, provided that said portion is at least 10 amino acids;

d) an optionally present linker joined to the carboxy terminus of said intracellular domain; and

e) a G-protein joined either to said intracellular domain or to said optionally present linker, provided that said G-protein is joined to said optionally present linker when said optionally present linker is present,

wherein said intracellular domain when present in a wild type receptor does not interact with said G-protein.

5. (Amended) The G-protein fusion receptor of claim 3, wherein said G-protein is selected from the group consisting of: G_{α15}, G_{α16}, Gqo5, and Gqi5.

32 6. (Amended) The G-protein fusion receptor of claim 5, wherein any of said CaR sequence present is a human CaR sequence, any of said mGluR sequence present is from a human mGluR, and any of said GABA_B receptor sequence present is from human GABA_B receptor.

7. (Amended) A nucleic acid comprising a nucleotide sequence encoding for the G-protein fusion receptor of any one of claims 1-6, 42, or 43.

8. (Amended) An expression vector comprising a nucleotide sequence encoding for the G-protein fusion receptor of any one of claims 1-6, 42, or 43 transcriptionally coupled to a promoter.

9. (Amended) A recombinant cell comprising the expression vector of claim 8 and a cell wherein the G-protein fusion receptor is expressed and is functional.

132 10. (Amended) A recombinant cell produced by combining a vector of claim 8, wherein said vector comprises the nucleic acid of claim 7 and elements for introducing heterologous nucleic acid into a cell wherein the G-protein fusion receptor is expressed, and said cell.

11. (Amended) A process for the production of a G-protein fusion receptor comprising: growing procaryotic or eukaryotic host cells comprising a nucleic acid sequence expressing the G-protein fusion receptor of any one of claims 1-6, 42, or 43, under suitable nutrient conditions allowing for cell growth.

Kindly enter the following new claims:

42. (New) The G-protein fusion receptor of claim 4, wherein said G-protein is selected from the group consisting of: $G_{\alpha 15}$, $G_{\alpha 16}$, G_{qo5} , and G_{qi5} .

133 43. (New) The G-protein fusion receptor of claim 42, wherein any of said CaR sequence present is a human CaR sequence, any of said mGluR sequence present is from a human mGluR, and any of said $GABA_B$ receptor sequence present is from human $GABA_B$ receptor.

44. (New) The G-protein fusion receptor of claim 1, wherein said intracellular domain has at least 90% sequence identity with a portion of a CaR intracellular domain sequence at least 50 amino acids in length.